



Master Plan

Parafield Airport

Volume 3: Sustainability Plan
(AIRPORT ENVIRONMENT STRATEGY)

November 2012

www.parafieldairport.com.au



TABLE OF CONTENTS

9	INTRODUCTION	105
9.1	COMMITMENT TO ENVIRONMENTAL SUSTAINABILITY	105
9.2	PURPOSE	105
9.3	STRUCTURE	105
9.4	LEGISLATIVE FRAMEWORK	105
9.5	POLICY FRAMEWORK	107
9.6	RESPONSIBILITIES	107
	9.6.1 Parafield Airport Limited	107
	9.6.2 Airport Environment Officer	107
	9.6.3 Airport Tenants and Operators	107
9.7	ENVIRONMENTAL MANAGEMENT SYSTEM	109
9.8	ENVIRONMENT SITE REGISTER	109
9.9	COMMUNICATION AND REPORTING	109
10	OBJECTIVES SUMMARY	111
11	MONITORING SUMMARY	113
12	SITES OF SIGNIFICANCE	115
	12.1 ENVIRONMENTAL	115
	12.2 INDIGENOUS	115
	12.3 HERITAGE	115
13	COMPLIANCE	117
	13.1 GROUND NOISE	117
	13.2 LOCAL AIR QUALITY	117
	13.3 STORMWATER	119
	13.4 SOIL AND GROUNDWATER	119
	13.5 HAZARDOUS SUBSTANCES	120
14	SUSTAINABILITY	121
	14.1 INTRODUCTION	121
	14.2 SUSTAINABLE BUILDINGS	121
	14.3 CLIMATE CHANGE	121
	14.4 ENERGY	122
	14.5 WATER RESOURCES	123
	14.6 WASTE	124
	14.7 LAND AND HERITAGE	125
	14.7.1 Natural Habitat	126
	14.7.2 Indigenous	127
	14.7.3 Heritage	127
	14.7.4 Flooding	127

LIST OF TABLES

Table 9.1	Structure and Responsibilities for Implementation of the Sustainability Plan
Table 9.2	EMS Structure
Table 10.1	Summary of Objectives
Table 11.1	Summary of Monitoring
Table 13.1	Compliance Objectives
Table 14.1	Sustainable Building Design Objectives
Table 14.2	Climate Change Objectives
Table 14.3	Energy Objectives
Table 14.4	Water Use Objectives
Table 14.5	Waste Management Objectives
Table 14.6	Land and Heritage Objectives

LIST OF FIGURES

Figure 9.1	PAL Sustainability Policy
------------	---------------------------

9 INTRODUCTION

9.1 COMMITMENT TO ENVIRONMENTAL SUSTAINABILITY

Parafield Airport Limited's (PAL) vision and ongoing success is founded on building and maintaining the three pillars of responsible business practice – financial, environmental and social sustainability. To ensure that its business thrives and is managed today in a manner that promises to meet the needs of future generations, the company must respond positively and innovatively to today's local and global challenges.

The central focus of this Sustainability Plan is minimisation of the company's environmental footprint in balance with the other pillars of sustainable business. PAL's Sustainability Program is underpinned by a commitment to legislative compliance (Volume 1) and driven forward by our desire for continuous improvement in environmental sustainability (Volume 3).

However, our goals cannot be achieved by PAL alone. We can effect change of those activities under our direct control, influence change through collaboration and negotiation with key stakeholders, and guide others to realise change through awareness and education.

9.2 PURPOSE

The purpose of this Sustainability Plan is to:

- fulfill our vision for sustainable airport growth and development;
- ensure all identified environmental sustainability risks are appropriately managed;
- facilitate our objective of remaining an airport industry leader;
- realise continuous improvement in environmental sustainability performance; and
- build upon the achievements of the 2009 Sustainability Plan (Airport Environment Strategy).

9.3 STRUCTURE

Our Sustainability Policy forms the foundation for this Sustainability Plan which in turn is implemented through the Sustainability Program. An Environmental Management System, conforming

to the requirements of ISO 14001, provides the framework linking legal obligations, the Plan and day-to-day actions under the Program. The Sustainability Policy is provided in Figure 9.1.

Our lessees are responsible for their organisation's environmental performance, including that of their sub-lessees and contractors. PAL is responsible for effectively managing the performance of activities and infrastructure under our direct control and influencing where possible the approach to environmental management taken by lessees and other airport users.

9.4 LEGISLATIVE FRAMEWORK

Under the *Airports Act 1996*, and with further reference to the *Airports (Environment Protection) Regulations 1997*, PAL must develop and implement an Airport Environment Strategy (hereafter referred to as a Sustainability Plan) which comprehensively sets out how PAL will prevent, control or reduce impacts associated with airport operation.

The Act establishes an environmental management regime that focuses on a cooperative approach, supporting and ensuring compliance with environmental standards at federally-leased airports. Part 6 of the Act specifically covers environmental management requirements, detailed in the Regulations.

Under Section 116 of the Act the Sustainability Plan must include:

- environmental management objectives for the airport;
- identification of the current environmental status of the airport including identification of environmentally significant areas;
- identification of sources of environmental impact associated with airport operations;
- an outline of the proposed studies, reviews and monitoring of current and future activities and a timeframe for these studies to be conducted;
- proposed measures to prevent, control or reduce environmental impacts associated with airport operations and the timeframe for their completion; and
- details and outcomes of consultation on the preparation of the Strategy with stakeholders.

SUSTAINABILITY POLICY



Adelaide Airport Limited (AAL) is committed to managing and developing Adelaide and Parafield Airports in a sustainable manner. Our philosophy is to operate and develop our airports in accordance with the principles of sustainable development, recognising that the success of our organisation can be enhanced by conducting business in a way that is environmentally, socially and economically responsible. We believe that in choosing this path we can improve outcomes for our business, our stakeholders and the wider community for generations to come.

MARK YOUNG
Managing Director
December 2011

AAL's objectives are to:

- minimise the environmental impact of our organisations' operations (including pollution prevention) through a program of continuous improvement;
- ensure that we provide a positive and safe working environment, where individuals are valued and equipped with the skills to effectively carry out their work;
- Integrate the principles of sustainable development, economic viability and operational efficiency into decision making at all levels and communicate these to our stakeholders;
- foster a culture of sustainability through our relationship with customers, partners, tenants, contractors and suppliers;
- engage with the local community in a positive and constructive manner and be a valued member of the community;
- ensure compliance with all relevant regulatory and other requirements; and
- rigorously monitor our progress against meaningful objectives and targets.

Review Date: December 2013

www.adelaideairport.com.au



Figure 9.1 PAL Sustainability Policy

Under the Regulations, the Sustainability Plan must include:

- sites identified to be of indigenous significance after consultation with relevant indigenous communities and organisations and Commonwealth or State bodies;
- proposed environmental management for areas of the airport which are not used, or planned to be used, for airport operations or aviation-related development; and
- proposed environmental management training for employees.

The Regulations outline the major obligations with respect to environmental matters on the airport, however, the Regulations do not apply to pollution or noise generated by aircraft (except ground running). The Commonwealth regulates these matters through the *Air Navigation (Aircraft Engine Emissions) Regulations* and the *Air Navigation (Aircraft Noise) Regulations 1994* respectively. Where the Regulations are silent, State law applies.

In addition, various industry codes of practice, Australian Standards and other guidelines are applicable to operators at the airport.

9.5 POLICY FRAMEWORK

As described in Chapter 6, there are a number of strategic and statutory documents at all levels of government, providing a planning framework or offering a perspective that have been considered in development of the Parafield Airport Master Plan. Relevant government policy documents have similarly been considered in the review of the Sustainability Plan. These include:

- National Strategy for Ecological Sustainable Development 1992 (Commonwealth);
- National Aviation Policy – Flight Path to the Future 2009 (Commonwealth);
- The Clean Energy Plan 2011 (Commonwealth);
- The National Water Initiative 2004 (Commonwealth);
- Australia’s Biodiversity Conservation Strategy 2010 (Commonwealth);
- South Australia’s Strategic Plan 2011 (State);
- 30-Year Plan for Greater Adelaide 2010 (State);
- Water for Good 2009 (State); and
- City of Salisbury Environmental and Climate Change Strategy 2008 (Local).

9.6 RESPONSIBILITIES

9.6.1 Parafield Airport Limited

As the airport lessee company (ALC), PAL has a range of duties under the Regulations. PAL leases the site from the Commonwealth Government and has a responsibility to manage the site as an airport. Integral to this is the requirement to set environmental management objectives for the airport. The ALC is required to identify sources of impact on the environment from airport operations and then manage programs to control, limit or prevent these impacts. Regular reporting to Department of Infrastructure and Transport (DoIT) on lease conditions, pollution levels and progress on commitments made in the Sustainability Plan all form part of the responsibilities of the ALC.

To ensure successful implementation of the Plan, PAL has established a robust internal management structure. Individual and group responsibilities are detailed in Table 9.1.

9.6.2 Airport Environment Officer

The Airport Environment Officer is appointed by the Secretary of DoIT and is authorised under the Act to exercise powers regarding environmental issues conveyed through the legislation. Focusing on strategic environmental goals, the Airport Environment Officer liaises with PAL, airport lessees and operators to ensure management of the airport environment is in accordance with the Act and Regulations. This occurs through regular meetings, site inspections, monitoring and reporting. In addition to this, the Airport Environment Officer may be asked to comment on building applications and may suggest the Airport Building Controller apply conditions to ensure that the environment is appropriately protected.

9.6.3 Airport Tenants and Operators

The airport hosts a wide variety of tenants including airlines, aircraft maintenance and avionics facilities, private charters, retail, freight warehousing, flight training and student accommodation facilities. Airport operators, such as taxi drivers, aircraft operators and contractors, use the airport regularly as part of their business operations. An array of contractors operates on airport participating in large-scale construction projects as well as conducting routine maintenance.

Table 9.1 Structure and Responsibilities for Implementation of the Sustainability Plan

Party	Responsibilities
Board of Directors (including Managing Director)	<ul style="list-style-type: none"> the environmental performance of PAL periodic review of the PAL Sustainability Policy allocation of resources to manage environmental sustainability issues
General Manager Corporate Affairs	<ul style="list-style-type: none"> ensuring roles/responsibilities for environmental sustainability management are defined and communicated implementing communication plans
General Manager Property	<ul style="list-style-type: none"> incorporating and managing regulatory and other environmental conditions within leases and other property contracts
Environment Manager	<ul style="list-style-type: none"> preparing the Sustainability Plan monitoring implementation of the Sustainability Plan and Program monitoring compliance with regulatory requirements preparation of the Annual Environment Report providing advice and specific training to staff, lessees, contractors and other airport users
Managers	<ul style="list-style-type: none"> management of environmental sustainability issues associated with their department's operations review of Department Plans ensuring that operations comply with applicable regulatory requirements identification of staff training needs staff environmental awareness
Staff	<ul style="list-style-type: none"> reporting environmental hazards, incidents, and stakeholder feedback adhering to relevant EMS Procedures undertaking work in compliance with applicable regulatory requirements participation in training sessions
Lessees / Contractors / Other Airport Users	<ul style="list-style-type: none"> reporting environmental hazards, incidents, and stakeholder feedback adhering to relevant environmental guidelines undertaking work in compliance with applicable regulatory requirements participation in induction sessions reporting environmental data and information to AAL

These stakeholders are key to environmental compliance and sustainability performance at the airport. PAL oversees their regulatory obligations and influences and guides their adoption of sustainable business practices through negotiation, co-operation and education. For example, tenants and contractors undertaking high risk activities are required to develop and implement Environmental Management Plans (EMPs).

All tenants are assigned an environmental risk ranking (Category 1, 2, 3 or 4) based on the potential of their business activities to cause harm, as defined in the Act. Category 1 tenants have the greatest potential for environmental impact, or causing serious environmental harm, through the nature and size of their operations.

Category 2 tenants have the potential to cause material environmental harm. Tenants in both these categories are therefore required to implement an EMP and are inspected annually against regulatory requirements and their own EMP. This process requires them to review their environmental risks regularly and set improvement actions as appropriate.

Category 3 tenants are those with less potential to impact upon the environment, and are encouraged to carry out their operations in accordance with industry best practice and in accordance with regulatory requirements. Category 3 operators are considered to only have the potential to cause environmental nuisance and are inspected every three years or when their work activities change requiring re-categorisation.

Category 4 tenants perform activities that are considered to pose a negligible risk to the environment and are inspected only as required. Large construction projects are subject to environmental inspections by PAL staff. Contractors directly engaged by PAL for maintenance and capital works are included in the inspection schedule to be assessed for compliance with environmental standards.

PAL has a positive and open relationship with its tenants and operators. To date there have been no offences committed under the Airports (Environment Protection) Regulations 1997.

9.7 ENVIRONMENTAL MANAGEMENT SYSTEM

A comprehensive Environmental Management System (EMS) provides the framework on which our Sustainability Program is planned, implemented, monitored and reviewed. The EMS conforms with AS/NZS/ISO 14001 (environmental management) and comprises several key elements described in Table 9.2 below.

9.8 ENVIRONMENT SITE REGISTER

In accordance with the Airports (Environment Protection) Regulations 1997 an Environment Site Register is maintained for Parafield Airport. The register identifies (by assigning a unique Site Number) the location of every site around the airport that has been subject to environmental monitoring, assessment, inspection, incident investigation and/or has been given Environmental Significance status. The features of each site, including its contamination status, are detailed in the register and the site location drawn onto an aerial map using GIS software.

A comprehensive data management tool has been developed using SharePoint as the platform to display Parafield Airport's Environment Site Register. This allows integration with other software as well as storing historical data. The tool is intranet based and therefore available to all PAL staff to be used for strategic and operational purposes. Data stored includes tenant risk ranking, nature of operational activity, contamination status, past and current land uses, environmental documentation and tenant risk ranking.

9.9 COMMUNICATION AND REPORTING

Parafield Airport is located within the City of Salisbury and surrounded by residential, recreational and industrial zones. PAL has continued to communicate and share environmental information with the community and key stakeholders through various forums including the Parafield Airport Consultative Committee, Tenant Environment Group, publications and the Parafield Airport website.

Quarterly Parafield Airport Consultative Committee meetings involving Commonwealth and State Government, local Councils, tenants, resident groups and other stakeholders are held to discuss a range of topics including noise management, community issues and environmental compliance. Regulatory issues are discussed between PAL and the Airport Environment Officer at regular monthly meetings.

Incident reporting forms part of the Environmental Management System (EMS) and is incorporated into the regular duties of PAL staff. Tenant and community feedback on environmental issues such as ground-based noise, odour and dust, as well as general comments and compliments, are recorded in the company's dedicated intranet database and addressed as appropriate.

Known and potential occurrences of pollution, such as hazardous substances spills, are reported in accordance with the Airport Emergency Plan, recorded in the PAL Incident Register and, if required, reflected in the Environment Site Register.

Table 9.2 EMS Structure

EMS Element	Outcomes
Policy	Sustainability Policy
Risk Management	<ul style="list-style-type: none"> · Environment risk register · Significant environment risk register
Legal Review	<ul style="list-style-type: none"> · Legal Register · Environment Site Register
Planning and Resource Allocation	<ul style="list-style-type: none"> · Sustainability Plan · Sustainability Action Plan (SAP) · Department Plans
Monitoring	<ul style="list-style-type: none"> · Monitoring Schedule · Workplace Inspection Schedule · Tenant Inspection Schedule · Construction Inspection Schedule · EMS Internal Topic Audit Schedule

An incident investigation process is used to identify the causes and guide future management practices to prevent their recurrence and reduce the risk of environmental pollution.

A comprehensive community stakeholder engagement program is undertaken by PAL, which is detailed in the Community Plan provided as Volume 4 of this MP.



10 OBJECTIVES SUMMARY

The Sustainability Plan is consistent with the Airport Master Plan in adopting a 20-year planning horizon, which in turn offers greater transparency as well as improved continuity between each 5-year Plan.

Long-term objectives are given in Table 10.1 for each area of environmental sustainability, providing the focus for our Sustainability Program over the next 20 years in alignment with our company vision and Sustainability Policy.

To meet these objectives, PAL has identified specific and, where possible, measurable 5-year goals and supporting management actions, which are tabulated under each of the areas addressed within Section 13 – Compliance and Section 14 – Sustainability. Action items under each goal have been allocated either a short-term (1-3 years) or long-term (4-5 years) timeframe, or is an ongoing action by PAL (1-5 years). It is PAL's aim to complete the short-term actions by mid-2015 and long-term actions by the end of this Master Plan period in 2017.

Table 10.1 Summary of Objectives

Stream	Area	Objectives (to 2032)
Compliance	Ground Noise Local Air Quality Stormwater Soil and Groundwater Hazardous substances	<ul style="list-style-type: none"> Operate and develop Parafield Airport in a manner that complies with relevant regulatory and other standards whilst striving for continuous improvement
Sustainability	Sustainable Buildings	<ul style="list-style-type: none"> Develop Parafield Airport through quality buildings of contemporary, sustainable design Manage PAL facilities in a manner that minimises cost and natural resource use
	Climate Change	<ul style="list-style-type: none"> Minimise PAL's carbon footprint Influence and guide other airport users to reduce their carbon footprint Adapt to future climate change impacts
	Energy	<ul style="list-style-type: none"> Minimise future electricity load growth through energy conservation measures and renewable energy
	Water Resources	<ul style="list-style-type: none"> Minimise the proportion of potable water consumption at Parafield Airport
	Waste	<ul style="list-style-type: none"> Increase the proportion of Parafield Airport waste diverted from landfill
	Land and Heritage	<ul style="list-style-type: none"> Conserve places of significant natural, indigenous and heritage value Enhance biodiversity, in particular within the Vernal Pools Conservation Zone Mitigate the risk of flooding



11 MONITORING SUMMARY

PAL operates a broad monitoring program that collects data across those numerous areas, as listed in Table 11.1 below.

Table 11.1 Summary of Monitoring

Stream	Area	Monitoring Activity	Frequency
Compliance	Ground Noise	Boundary noise	Tri-annually and as required As required
		Construction noise	
	Local Air Quality	Air Quality Stack Monitoring	As required As required
	Stormwater	Stormwater Quality (Tier 1) Stormwater Quality (Tier 2) Vernal pool water quality	Monthly (Apr-Oct) and as required As required Monthly (during hydroperiod)
	Soil and Groundwater	Soil and groundwater contamination (existing sites) Soil and groundwater contamination (new sites) Background groundwater quality	Annually and as required As required Annually
	Hazardous substances	Asbestos volumes Hazardous substances storage National Pollutant Inventory	Annually Annually and as required Annually
Sustainability	Sustainable Buildings	Sustainability Performance Indicators (PAL buildings)	Quarterly
	Climate Change	Carbon Footprint (Scope 1 & 2)	Annually
	Energy	Energy consumption (PAL buildings)	Annually
	Water Resources	Water consumption (PAL buildings)	Annually
	Waste	Waste volumes (PAL buildings)	Quarterly
	Land and Heritage	Vernal pool flora/fauna survey Other flora/fauna surveys Indigenous artefact surveys Built heritage surveys	Annually As required As required As required



12 SITES OF SIGNIFICANCE

12.1 ENVIRONMENTAL

There is one site of environmental significance on Parafield Airport – the Vernal Pools Conservation Zone (VPCZ) – providing habitat that is host to significant vegetation communities, isolated flora, and unusual / uncommon fauna.

The area and its management is described in more detail in Section 14.7 – Land and Heritage and delineated in Figure 6.3 – Conservation and Buffer Zones.

12.2 INDIGENOUS

Large areas of the airport have been surveyed in previous years and from which two sites of significance were recorded, both containing indigenous artefact scatters, and situated within the Vernal Pools Conservation Zone in the Bennett Precinct (PAL, 2004).

Management of the above sites is described in more detail in Section 14.7 – Land and Heritage.

12.3 HERITAGE

There are no sites of heritage significance within Parafield Airport under ownership or control of PAL that are listed or that qualify for listing on the Commonwealth Heritage Register. The Air Traffic Control Tower, which is owned and occupied by Airservices Australia (Airservices), has been nominated by Airservices for listing on the Commonwealth Heritage Register, and a decision was pending at the time of publication. Should the application be accepted, the building will be identified by PAL as a site of heritage significance.

PAL is in the process of surveying the airport's built infrastructure.



13 COMPLIANCE

Compliance activities provide the foundation to PAL's Sustainability Program. The following risk areas – ground noise, local air quality, stormwater, soil and groundwater, and hazardous substances – are core areas of compliance management.

Compliance is not, however, a static goal. As for the areas addressed in Section 14 – Sustainability, management of these risk areas is viewed by PAL through the lens of continuous improvement. Goals and management actions are provided in Table 13.1 and build upon the achievements of previous Airport Environment Strategies/Sustainability Plans.

13.1 GROUND NOISE

PAL has a critical role to play in managing noise impacts on the local community and on-airport users from ground-based activities whilst also being an active and influential stakeholder in addressing noise impacts from aircraft in flight. Issues relating to aircraft noise from current operations and proposed changes to aviation infrastructure are detailed in Section 7 of the MP.

The major contributors of noise and vibration arising from airport ground-based activities include aircraft ground-running (engine testing), parked aircraft, ground vehicles, plant and equipment, and construction activities.

Repeated noise monitoring surveys focussing on the residential zone adjacent the western airport boundary have showed noise levels from ground-based operations to be well below relevant regulatory criteria. Nonetheless, PAL continues to implement controls to minimise potential off-airport impacts.

Ground running (engine testing) activities undertaken by aircraft operators are strictly controlled through monitoring and enforcement of PAL's Engine Ground Running Policy. Similarly, operations and construction activities are controlled through tenant or construction EMPs and leases, where applicable, and monitored through a program of regular site inspections.

Development is proposed for the Cross Keys and Kings Precincts, which are adjacent the southern

and western airport boundaries respectively. To limit residential impacts from proposed aviation, commercial freight, warehousing and industrial activities that may contribute to the airport noise profile, noise modelling has previously been undertaken (consistent with the Cross Keys Major Development Plan (PAL, 2004)), and further validation modelling may be conducted as development progresses. If required, attenuation measures can then be incorporated into these developments at the design phase to ensure operations comply with both Airports (Environment Protection) Regulations 1997 and State regulatory noise criteria. Once operational, regular checks of developments will occur in the form of tenant inspections and, if required, noise monitoring.

PAL is committed to engaging with the community on noise issues, as demonstrated in 2010 with the distribution of over 58,000 brochures to local residents on aircraft noise. A pro-active engagement and consultation program will be undertaken ahead of projected development timeframes to specifically address ground-based noise concerns.

13.2 LOCAL AIR QUALITY

Parafield Airport is situated within a highly urbanised area surrounded by residential, recreational and industrial zones. Air quality in the northern Adelaide airshed has been monitored by the SA EPA for over a decade at sites in Elizabeth Downs and Hampstead for ambient levels of key pollutants, namely carbon monoxide, nitrogen dioxide, ozone, sulphur dioxide and particles less than 10 micrometres in diameter. Data published to date by the SA EPA show air quality in the airshed that encompasses Parafield Airport meets the relevant National Environment Protection (Ambient Air Quality) Measure 2003 criteria.

PAL is responsible for monitoring air emissions from ground-based activities such as refuelling, painting, cleaning, machining, mechanical maintenance, generator use, commercial cooking and construction. The most significant pollutant generated at Parafield Airport is dust from earthworks. PAL monitors the dust mitigation activities as detailed in construction EMPs and monitors compliance during construction inspections.

Table 13.1 Compliance Objectives

Objective (by 2032)			
Operate and develop Parafield Airport in a manner that complies with relevant regulatory and other standards whilst striving for continuous improvement			
Goal (2012-2017)	Management Actions (2012-2017)	Responsibility	Timing (years)
Strive for 100% compliance for developments and airport activities with relevant noise regulations	· Continue to conduct regular boundary noise monitoring	PAL	1-5
	· Continue to model noise impacts for proposed new developments and implement mitigation strategies where necessary	PAL / Contractors	1-5
	· Continue to include relevant noise mitigation in Construction Environmental Management Plans and conduct inspections	PAL/Contractors	1-5
	· Continue to enforce the PAL Ground Running Policy	PAL/Tenants	1-5
	· Continue to engage with the local community on noise issues	PAL	1-5
	· Continue to provide guidance to stakeholders on noise mitigation strategies	PAL	1-5
Strive for 100% compliance for developments and airport activities with relevant air quality regulations	· Conduct air quality monitoring as required	PAL/Contractors	1-5
	· Collaborate with the EPA to investigate future impact of aviation on local air quality	PAL/Government	1-2
	· Continue to collect air emissions data from point sources as required	Tenants	1-5
	· Continue to maintain a register of ozone depleting substances and phase out where feasible	PAL	1-5
	· Continue to provide guidance to stakeholders on air quality improvement strategies	PAL	1-5
Maintain and, where feasible, improve stormwater quality	· Continue to regularly monitoring stormwater quality	PAL/Contractors	1-5
	· Identify sources of pollution as per the SQMIP and mitigate sources of pollution where identified	PAL/Tenants	1-3
	· Conduct a revegetation trial of a section of unlined waterway network to assess stormwater quality improvement	PAL/Contractors	4-5
	· Monitor success of revegetation using the Index of Stream Condition	PAL/Contractors	4-5
	· Continue to provide guidance to stakeholders on stormwater quality improvement strategies	PAL	1-5
Maintain and, where feasible, improve soil and groundwater quality	· Continue to conduct regular groundwater monitoring	PAL/Contractors	1-5
	· Continue to implement priority actions from the Contaminated Site Management Plan	PAL/Tenants	1-5
	· Continue to guide tenants to close out contaminated sites on a risk basis where practicable	PAL/Tenants	1-5
	· Continue to conduct relevant environmental site assessments for new developments and lease terminations in accordance with the PAL Environmental Site Assessment Guidelines	Developers/ Tenants/PAL	1-5
	· Continue to provide guidance to stakeholders on contamination prevention and remediation strategies	PAL	1-5
Strive for 100% compliance for hazardous substance storages, handling and disposal	· Continue to store and manage hazardous substances and dangerous goods in accordance with regulatory requirements	PAL/Tenants/ Developers	1-5
	· Tank integrity programs to be implemented for all USTs, including groundwater monitoring where required	Tenants	1-5
	· Continue the environmental inspection program of tenants and construction sites	PAL	1-5
	· Continue to implement emergency response plans for hazardous substances spills	PAL/Emergency Services/Tenants	1-5
	· Continue annual asbestos audit and removal program	PAL	1-5
	· Continue to provide guidance to stakeholders on hazardous substances management	PAL	1-5

Emissions from minor point sources, such as paint shops, machine shops and commercial kitchens, are extracted and filtered prior to discharge.

Aviation and industrial developments proposed for the Central, Runways and Cross Keys Precincts may incorporate paint and/or machine shops in their design. Extraction systems will be reviewed by PAL against SA EPA requirements and relevant Australian Standards during the building consent process and, if necessary, modelled to ensure air quality criteria will be met.

13.3 STORMWATER

Parafield Airport lies at the downstream end of several regional catchments. The Main North Road Diversion Drain on the airport, managed by the City of Salisbury, collects flows from the urban catchment to the east of Main North Road and the Commercial Estate Precinct.

Abutting the southern airport boundary, the Bennett Road Drain, which is also under management by the City of Salisbury, collects marginal surface water from the southern section of the airport and predominantly from upstream areas including Main North Road. The Airport West Drain abutting the railway reserve and the airport directs flow from the airport and upstream catchments including the suburb of Salisbury South and acts as a supply for the established City of Salisbury stormwater harvesting project. Stormwater from these catchments is released to Gulf St. Vincent via Dry Creek, downstream of the airport.

PAL is committed to improving stormwater quality and consequently the ecological health of the airport's waterways by supporting aquatic ecosystems, as detailed in the PAL Stormwater Quality Management and Improvement Plan (SQMIP). Implementation of this plan, which includes monitoring and assessment of the ecological health of the open drain network, installation of gross pollutant traps, drain revegetation, and adoption of water sensitive urban design principles, will allow control of pollutant loads from activities on the airport.

Sources of stormwater pollution at Parafield Airport are similar to those in urban catchments, namely vehicles, roads, debris from vegetation, sediment, general commercial activities and hazardous substances storages. To mitigate these impacts PAL requires interceptors be installed at the discharge point for all new developments. High risk tenants are also regularly inspected to check compliance of

hazardous substances storages and other potentially polluting activities. New aprons proposed in the Runways Precinct may pose an increased risk of impacting quality of stormwater run-off from refuelling and aircraft washing. Spill response and clean up in accordance with the Airport Emergency Plan is intended to minimise environmental impacts from fuel incidents and tenants are inspected for conformance to PAL's Aircraft Washing Guidelines.

Parafield Airport monitors stormwater for pollution in two areas: general surface water (runoff from sealed surfaces), and rainwater captured within the Vernal Pools Conservation Zone. The latter is addressed in Section 14.7 – Land and Heritage.

A two tier structure is applied to stormwater monitoring, as detailed in the SQMIP. Tier 1 sampling involves the collection of monthly composite samples from April through October at the airport's primary stormwater discharge point and the results compared against Commonwealth and State water quality criteria. One summer event between November and March is also captured annually, subject to rainfall. Tier 2 sampling is triggered when the criteria are exceeded, with the aim of identifying the pollution source(s).

Stormwater discharges from within the airport boundary are of a quality consistent with stormwater discharge monitored from off-airport urban catchments and a much higher quality than commonly reported for urban catchments in Australia (Wong et al 2000).

13.4 SOIL AND GROUNDWATER

Managing contamination is an ongoing priority and all practicable measures are undertaken to minimise the environmental and health risks posed by historic and new soil and groundwater contamination. High risk sources include hazardous substance leaks and spills, principally those associated with aviation fuel storage and transport, and imported fill material.

The majority of operations that take place at the airport are on impervious surfaces which greatly reduce the likelihood of contamination. Above ground hazardous substances storages are required to comply with relevant regulatory standards and are regularly inspected. There is a requirement for an integrity testing program to be implemented for underground storages, including the installation of monitoring wells. A comprehensive emergency response plan exists that is routinely practiced and reviewed.

New aviation support facilities, aprons and the

runway extension mooted for the Kings, Central and Runways Precincts, which are planned to cater for airport operational growth, will expand the range and/or intensity of aircraft movements which brings an increased risk of fuel spills. Spill response and clean up forms an integral part of the Airport Emergency Plan (PAL, 2011a) which is in place to minimise environmental impacts from such events. New hazardous substances stores will be assessed during the building approval process and then regularly inspected to ensure compliance with regulatory requirements. The proposed developments require excavation works that could potentially expose existing contamination, whether from hazardous substances or asbestos-containing materials. In this situation, contamination will be managed through implementation of construction EMPs. Imported fill must also be certified clean in accordance with PAL's Waste Fill Importation Guidelines (2009b).

A relocated petrol station and vehicle wash facility possible for the Commercial Precinct would have underground and above ground storage tanks for fuel. A range of mitigation measures required to limit impacts on local soil and groundwater quality include tank integrity programs, installation of groundwater monitoring wells and compliance with relevant Australian Standards, as managed through the Building Approval process. Any simultaneous decommissioning of the existing facility will be managed in accordance with national standards to achieve compliance with the scheduled criteria in the Regulations.

PAL's Building Approval process triggers the requirement for an environmental site assessment to be undertaken prior to development, upon a change in leasing arrangements or a change in land use. A suite of guidelines on the requirements for undertaking an environmental site assessment, importing clean fill onto airport, and fuel management are available to all tenants and contractors.

PAL oversees a contaminated site management program involving regular monitoring in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 and liaison with responsible tenants on the progress of soil and groundwater monitoring programs and remediation action plans. Groundwater wells have been placed at specific locations by either PAL or tenants for the purpose of monitoring contamination levels. PAL has installed additional wells at locations suited to providing baseline groundwater quality

data for comparison against known contaminated sites.

PAL liaises with tenants of newly identified contamination, educating them on the various components of contaminated site management such as monitoring, environmental and/or health risk assessments and remediation action plans, and tracking progress and implementation. The status of relevant sites is captured and regularly updated in the airport's Contaminated Site Register.

13.5 HAZARDOUS SUBSTANCES

Hazardous substances, primarily aviation fuels, are used across the airport on a daily basis and have the potential to cause significant environmental and health impacts if they are not appropriately stored and managed.

Above ground hazardous substances storages, and associated spill response equipment, are regularly inspected for compliance with relevant regulatory standards, and underground storages must be subject to an integrity testing program. Details of all storages are included in the airport's Hazardous Substances Register.

Minor spills are routinely reported to PAL however clean-up is the responsibility of individual tenants and other airport users. PAL staff and key tenants receive spill response training and spill response equipment is kept in designated airside and landside locations. A comprehensive airport emergency response plan exists for large spill incidents.

Asbestos-containing materials are regularly inspected and managed in accordance with State regulations. An Asbestos Register is maintained for all PAL-owned buildings and selected materials are removed on a risk basis. Any demolition works are preceded by an asbestos audit by qualified contractors and occur in strict accordance with State regulatory standards prior to works commencing.

Records of all Ozone Depleting Substances on airport are maintained by PAL and staff hold relevant licences for handling refrigerants. No products containing Polychlorinated Biphenyls have been identified to date by PAL; however, assessments may be undertaken as required.

14 SUSTAINABILITY

14.1 INTRODUCTION

Sustainable design and development is at the core of our vision for Parafield Airport and is therefore a central focus of our Sustainability Plan. The impact that we have on the local environment can have local, regional or even global consequences. Excess resource consumption, waste generation, degradation of biodiversity and heritage values, and pollution of our land, air and waterways are all potential impacts that thoughtful, consultative airport planning, innovative building design, low-impact construction and smart airport operation can minimise or eliminate.

At Parafield Airport, PAL intends to apply sustainable design thinking to each level of airport planning, development and operation. At the macro level, overarching design of the airport's built environment will seek to address in dynamic balance the principles of financial, environmental and social sustainability. Economic prosperity, strengthening links between the airport and surrounding community (Volume 4 Community Plan) and striving, in consultation with stakeholders, to harmonise on-airport and off-airport planning (Volume 1 Master Plan) will help foster positive, durable relationships between people and the airport. At the development level, these principles will manifest in the form of innovative, efficient and quality buildings (Section 14.2 Sustainable Buildings). At the micro level, PAL is committed to implementing a step change in its routine operations. Purchasing and process-related decisions will pass through a sustainable design filter, ensuring a mindful approach to airport management and reduced environmental impacts (Sections 14.3-14.7).

14.2 SUSTAINABLE BUILDINGS

Measuring various components that make up a development's environmental footprint provides the foundation for better asset design and investment decisions and more efficient operation and maintenance. Metrics for building design and operation are increasingly used in capital development and asset management and can be applied to many developments proposed for Parafield Airport such as warehouses, hangars and workshops. PAL intends to adopt such metrics to benchmark design and operation of PAL owned

and managed assets against internal targets and, where relevant, external rating systems. A process is already underway to establish quantifiable Sustainability Performance Indicators and Sustainability Performance Targets to enable us to assess the environmental sustainability of current and future PAL buildings.

For larger scale development zones, PAL will continue to draft and update Development Design Guidelines that not only include built form and amenity provisions, but environmental sustainability principles directed at energy efficiency (beyond the mandated requirements within the Building Code of Australia, where feasible) and building orientation and configuration appropriate for the age and type of development.

As the airport grows, significant opportunities will also exist for developers and tenants to demonstrate sustainability initiatives. Over the next five years, PAL will encourage and influence developers to strive for green building standards and employ, as a minimum, the sustainable design elements embedded in the Principles of Development Control (see Section 6) and relevant PAL Development Design Guidelines (see Table 14.1).

14.3 CLIMATE CHANGE

In recent years, global focus on climate change has shifted away from the scientific debate surrounding the extent of human activity's contribution to global warming towards the strategies needed for tackling its progression. The Fourth Assessment Report released by the Intergovernmental Panel on Climate Change in 2007 stated the existence of climate change as "unequivocal" and attributed the main causes of the change to human activities. Since that time the Australian government has committed to reduce greenhouse gas emissions to 25 per cent below 2000 levels by 2020, subject to international consensus. The *National Greenhouse Gas and Energy Reporting (NGER) Act 2007* was subsequently established to provide a framework for mandatory corporate carbon reporting. To transition our nation towards a low-carbon economy, the government has introduced a carbon tax from 1 July 2012.

Table 14.1 Sustainable Buildings Objectives

Objective (by 2032)			
<ul style="list-style-type: none"> · Develop Parafield Airport through quality buildings of contemporary, sustainable design · Manage PAL facilities in a manner that minimises cost and natural resource use 			
Goal (2012-2017)	Management Actions (2012-2017)	Responsibility	Timing (years)
Design, construct and manage PAL assets to meet targets aligned to key Sustainability Performance Indicators (SPI)	· Align SPLs to PAL's Principles of Development Control	PAL	1-3
	· Measure PAL's asset operation in alignment with Sustainability Performance Indicators (SPI)	PAL	1-3
	· Regularly review progress of operational performance against Sustainability Performance Targets (SPT)	PAL	1-3
	· Create a reporting tool to convey asset management results	PAL	1-3
	· Improve building performance through cost-effective improvements to operation and maintenance practices	PAL	4-5
Implementation of sustainable design principles	· Incorporate sustainable design principles into Development Design Guidelines, encouraging adoption of energy efficiency measures beyond baseline requirements within the Building Code of Australia	PAL	1-3
	· Continue to identify sustainable development opportunities	PAL/Developers	1-5
	· Establish relevant performance metrics in alignment with PAL's Principles of Development Control	PAL	1-3
	· Encourage the adoption of PAL or external performance metrics	PAL/Developers/ Tenants	4-5
Embed principles of stewardship into corporate processes and through the supply chain	· Encourage the adoption of green leases where appropriate	PAL/Tenants	4-5
	· Encourage customers, partners and suppliers to adopt sustainability principles and practices	PAL/Stakeholders	1-3
	· Promote stewardship initiatives throughout the supply chain through preferred 'suppliers of choice'	PAL/Suppliers	4-5
	· Incorporate SPLs into standard works contracts	PAL	4-5

The global trend is towards a carbon constrained future which demands that businesses address the various risks associated with climate change. A prudent carbon management program addresses (a) carbon risk (the potential financial and business impact associated with a carbon constrained economy) and (b) climate risk (the potential impact on assets and operations associated with more variable climate).

To manage carbon risk PAL is committed to continue measuring emissions through its greenhouse gas accounting system and reduce its company carbon footprint through various initiatives, including implementation of clean energy measures (see Section 14.4 – Energy). PAL is committed to reducing the carbon footprint associated with infrastructure and activities under its operational control. The proposed expansion of aviation and non-aviation development activity across all precincts will impact the environment, as well as the cost of doing business, proportionate to the increase in energy consumption. PAL's challenge is to educate and guide stakeholders on strategies that support the dual aims of tempering their appetite for energy and realising commercial growth. PAL will continue to engage with tenants, contractors and developers on this issue and cost-effective opportunities for

improved carbon management will be pursued (see Table 14.2).

According to the CSIRO (2007) the climate in South Australia is predicted to be warmer and drier with changes to seasonal rainfall patterns and greater frequency of drought. The potential operational and economic impacts from climate changes range from decreased water supply, increased utility prices, infrastructure deterioration, and habitat stress. A climate adaptation program will assess the impacts of future climate scenarios on aviation, infrastructure and natural heritage with the outcomes to be considered in future airport planning.

14.4 ENERGY

Parafield Airport is a relatively modest consumer of energy resources. Electricity in airport buildings is predominantly used for heating, cooling and lighting. Of these buildings, only a small percentage are owned and occupied by PAL; the remainder either leased to, or owned and occupied by tenants. A map depicting building ownership is provided in Appendix E - Building Ownership and Tenancy.

Whilst infrastructure owned and managed by PAL consumes relatively minor amounts of electricity it nonetheless generates greenhouse gases accounted

Table 14.2 Climate Change Objectives

Objective (by 2032)			
<ul style="list-style-type: none"> Minimise PAL's carbon footprint Influence and guide other airport users to reduce their carbon footprint Adapt to future climate change impacts 			
Goal (2012-2017)	Management Actions (2012-2017)	Responsibility	Timing (years)
Reduce PAL's company carbon footprint (30% of 2010 levels by 2017)	Continue annual measurement of the company carbon footprint	PAL	1-5
	Detail and enforce minimum energy efficiency standards for all equipment, including motor vehicles, in the company purchasing policy	PAL	1-3
	Consider voluntary offset up to 30% of AAL's company carbon footprint by 2017	PAL	4-5
Encourage and, where feasible, facilitate tenants to measure and reduce their carbon footprint	Support and facilitate fuel reduction initiatives by aircraft operators where possible	PAL / Operators	1-3
	Assess the feasibility of introducing biofuels in partnership with flight training operators	PAL / Operators	4-5
Improve PAL's preparedness against the likely impacts of climate change on infrastructure and operations	Conduct an infrastructure review against projected climate change scenarios	PAL	1-3
	Incorporate, where required, new pavement and building standards into development and construction guidelines	PAL	4-5
	Accommodate, where required, extreme weather events into the Airport Emergency Plan	PAL / Emergency Services	4-5
Strive to increase the proportion of airport visitors and tenants using alternative forms of transport or changing their transport habits	Establish baseline data on transport patterns by airport visitors and tenants	PAL	1-3
	Develop a Bicycle / Pedestrian Access and Safety Plan for the airport	PAL	1-3
	Facilitate construction of a Park n Ride service at the Parafield Train Station	State Government	4-5
	Increase the scope of service provided by public buses to the airport	State Government	4-5

for in PAL's carbon footprint and includes:

- office lighting, heating and cooling;
- street lighting;
- airfield lighting; and
- maintenance compound emissions.

Airport electricity consumption is calculated annually, to serve as a basis for carbon footprint calculation and to provide a baseline for assessing building performance against our future energy efficiency program, which will be guided by the recommendations stemming from energy audits of PAL-owned buildings, plant and equipment. This program will be a subset of PAL's overarching carbon management program and be a critical step towards its efforts to reduce the company's carbon footprint.

The proposed expansion of aviation and non-aviation development activity across all precincts will result in increased energy consumption. PAL will seek to identify cost-effective energy reduction options, expand our preventative maintenance program in alignment with development, educate employees and tenants on energy efficiency

practices, encourage the adoption of clean energy principles, and identify opportunities to generate renewable energy (see Table 14.3).

14.5 WATER RESOURCES

Recent drought, uncertainty with respect to South Australia's long-term water availability and rising supply costs has led to water emerging as a priority issue for PAL. Security of water supply and best practice water conservation are critical goals, building on our solid track record of leadership in water sensitive urban design.

Stormwater harvested by the City of Salisbury from local drains and treated in a series of wetlands on Parafield Airport has been a supplementary source of non-potable water to off-airport facilities (e.g. sports grounds, schools) and residential areas (eg. Mawson Lakes) for several years.

Where feasible, PAL is committed to securing non-potable water supplies for new and existing developments. Recent expansion of the existing recycled water network has been completed with new supply points constructed in the Central, Cross

Table 14.3 Energy Objectives

Objective (by 2032)			
· Minimise future electricity load growth through energy conservation measures and renewable energy			
Goal (2012-2017)	Management Actions (2012-2017)	Responsibility	Timing (years)
Reduce electricity consumption in buildings owned and occupied by PAL (20% of 2010 levels by 2017)	· Collate electricity baseline data	PAL	1-3
	· Conduct level 2 energy audit of PAL Management Centre	PAL/Contractors	1-3
	· Implement Energy Audit Action Plan where feasible	PAL/Contractors	1-3
Increase proportion of PAL's electricity consumption from on-airport renewable energy generation (20% of total by 2017)	· Investigate possible locations for renewable energy installations	PAL/Contractors	1-3
	· Partner with Government and leading R&D institutions to facilitate trials for emerging renewable technology	PAL/Contractors	4-5
	· Install renewable energy power station, where economically feasible	PAL/Contractors	4-5
Encourage tenants to implement energy efficiency measures	· Develop tools and provide guidance to tenants on techniques for measuring emissions and reducing energy consumption	PAL/State Government	1-3
	· Run specialist information sessions on opportunities for purchasing green energy and participating in carbon off-set schemes	PAL/Tenants	1-3
	· Provide support to tenants who are filing funding applications for energy efficiency projects	PAL/Tenants	4-5

Keys and Levels Precincts. A map depicting the locations of current and future planned supply points is provided in Figure 6.2.3.

Of the developments proposed, the possible motel in the Levels Precinct is likely to have higher water consumption requirements. Connection to the recycled water network, for use in toilet flushing and irrigation, and water efficient fittings will be encouraged. Developments with a large roof area, such as warehouses and hangars, provide opportunity for rainwater capture and reuse, supplementing recycled water supplies from the existing network. The integration of water sensitive urban design principles in new development design and adoption of the airport's Landscape Guidelines (2008) will also be promoted. PAL will continue to implement water efficiency measures guided by recommendations from water audits conducted of the PAL Management Centre. Water use objectives and goals are included in Table 14.4.

14.6 WASTE

The waste streams generated by PAL and tenant operations include organics (e.g. food), paper and cardboard, aluminium cans, plastics, electronic, construction and hazardous wastes (e.g. waste oil, fluorescent tubes) and green waste.

PAL embraces the waste management hierarchy espoused by Zero Waste SA – in order of highest to

lowest efficacy, and therefore priority, is avoidance, reduction, reuse, recycle, recovery, treatment and disposal.

Waste avoidance has been realised within PAL through numerous initiatives such as the phased elimination of paper-based forms and record keeping, replacement of bulk liquid herbicides with a granular equivalent, and transition to an alternative asphalt patching mix. Unwanted plant and equipment is sold for reuse, demolition waste reused as road base and green waste composted for use on-airport. Recycling programs exist for paper and cardboard, printer cartridges, waste oil, batteries, drink containers, construction waste and food waste. Further reduction of waste to landfill can be achieved through the development and implementation of a waste management strategy and planned introduction of a green purchasing policy.

PAL works collaboratively with tenants to reduce waste, and seeks to positively influence their environmental performance. Similarly, tenants posing a high risk of wildlife attraction are provided with guidance in developing Waste Management Plans, with the aim of reducing Foreign Object Debris and the likelihood of attracting wildlife to the airport environs (Table 14.5).

Table 14.4 Water Use Objectives

Objective (by 2032)			
· Minimise the proportion of potable water consumption at Parafield Airport			
Goal (2012-2017)	Management Actions (2012-2017)	Responsibility	Timing (years)
Reduce mains water consumption in buildings owned and occupied by PAL (10% of 2010 levels by 2017)	· Conduct a water audit and implement the resulting Water Audit Action Plan where feasible	PAL/Contractors	1-3
	· Continue to seek opportunities for implementing water sensitive urban design principles	PAL/Contractors	1-5
	· Continue to update the water meter network to improve data accuracy, where required	PAL/Contractors	1-5
Increase the number of connections made to non-potable water sources, where practicable	· Connect irrigation to City of Salisbury's recycled water network	PAL/Council	1-3
	· Encourage new developments to connect to the recycled water network	PAL/Developers	1-3
	· All new developments to incorporate water sensitive urban design features such as rainwater tanks or other water harvesting systems	Tenants/ Developers	1-3
Increase the number tenants implementing water efficiency measures, where possible	· Identify high water-use tenants	PAL	1-3
	· Develop tools and provide guidance to tenants on techniques for measuring and reducing water consumption	PAL/Tenants	4-5
	· Run specialist information sessions on opportunities for water harvesting and efficiency	PAL/Tenants	4-5

Table 14.5 Waste Management Objectives

Objective (by 2032)			
· Increase the proportion of airport waste diverted from landfill			
Goal (2012-2017)	Management Actions (2012-2017)	Responsibility	Timing (years)
PAL Management Centre to be a zero waste facility by 2017	· Conduct a waste audit	PAL/Contractors	1-3
	· Develop and implement a Waste Management Strategy	PAL	4-5
Implement an environmental purchasing program	· Review the PAL purchasing policy	PAL	1-3
	· Review hazardous materials purchasing	PAL	1-3
	· Identify environmental purchasing opportunities	PAL	1-3
	· Run a staff education campaign on green purchasing	PAL	1-3
Increase waste reuse and recycling, where feasible	· Develop a Parafield Airport tenant group for networking with regard to sustainability initiatives	PAL / Tenants	1-3
	· Run a tenant awareness campaign on the opportunities and benefits of effective green purchasing and waste management	PAL / Tenants	1-3
	· Develop Waste Management Guideline for tenants and contractors	PAL / Contractors	1-3
	· Continue to support airport tenants to expand their waste avoidance, reuse and recycling programs	PAL / Tenants	1-5
	· Continue to encourage recycling and rejuvenation of demolition and construction waste	PAL / Contractors	1-5
	· Develop guidelines on recyclable construction materials	PAL	1-3

14.7 LAND AND HERITAGE

Prior to European settlement the region around Parafield Airport was likely to have consisted of grassy plains interspersed by riparian woodlands hugging the Little Para and Gawler Rivers. Later referred to as the Northern Adelaide Plains, these were dominated by Wallaby (*Austrodanthonia*) and Spear (*Austrostipa* spp) grasses, which gave way to samphire shrublands to the west and eucalypt woodlands (*Eucalyptus porosa*) to the east.

Despite drastic modification of the Northern Adelaide Plains landscape, Parafield Airport has retained some native 'threatened' habitat, namely the last known population of vernal pools (Seaman, 2002). The pools fill with rainwater in winter and dry out over summer, resulting in a specific environment which requires specialist adaptations by their flora and fauna populations.

The uplands, which include the buffer zones around each pool and wider interconnecting grasslands, are highly degraded, dominated by exotic flora such

as Barley Grass (*Critesion*), but host some specimens of State endangered Black Cotton Bush (*Maireana decalvans*) and a number of other vernal pool specialist species, including plants of State and/or regional conservation significance. The pools themselves support several species of native birds, reptiles, amphibians and unusual invertebrates, such as the Shield and Clam Shrimps (Delta Environmental Consulting, 2002).

In the Bennett Precinct only, State Government archival information identifies several local archaeological (Kaurna) sites, including isolated artefacts, stone artefact scatters, burial and 'mound' sites (often containing human burials, animal remains, oven stones and stone artefacts). Such records point to a rich and varied history of occupation by the Kaurna people across the region, which included a practical and cultural relationship with the ephemeral creeks, swamps and basins in and around the current airport site (Wood, 1999).

Parafield Airport also has a vibrant post-European settlement history, marked by several distinct development periods: establishment as a civilian aviation facility (1927-38); a WW2 defence training facility (1939-44); South Australia's commercial aviation gateway; and a centre for pilot training (1955 onwards). The Airservices air traffic control tower has historical significance, posited to be the oldest surviving building of its kind in Australia, and has been referred for possible Commonwealth heritage listing (Lovell Chen, 2009).

14.7.1 Natural Habitat

The pools and surrounding uplands are preserved within the Vernal Pools Conservation Zone (VPCZ), extending within portions of the Bennett and Cross Keys Precincts. They are to be managed in accordance with a proposed Vernal Pools Conservation Zone Management Plan based upon the findings of extensive monitoring and impact mitigation studies by Delta Environmental Consulting (2002, 2006a, 2006b and 2006c).

A history of clearing, grazing and aviation activity has degraded a number of pools and the surrounding uplands. To support habitat regeneration, PAL will develop and implement a Revegetation Plan in consultation with the City of Salisbury, who have expressed their intent to accept responsibility for the care, control and management of pools within the Bennett Precinct (PAL, 2004). Resources will initially be focussed on re-establishing mixed grasses and chenopod shrubs across upland

areas and thereby develop habitat that best supports the fauna utilising the VPCZ and offer protection to the pools.

Complying uses proposed in Section 6 for the Bennett Precinct – namely interpretive centre, kiosk, pedestrian paths and signage – are compatible with its primary conservation role. Indeed, they will enable interaction with the area in a strictly controlled manner at specified times and create opportunity for the public and students alike to learn about this unique habitat. All developments will be located at the margins of the Precinct, adjacent to the main road corridors well outside the vernal pool buffer zones. Their design and construction will possess a small ecological footprint, prevent excess stormwater runoff to the pools and result in no net loss of native habitat. Human impact will be further minimised through construction of dedicated trails and, where appropriate, boardwalks complemented with signage and fencing.

Two road access points into Cross Keys Precinct are proposed from Elder Smith Road. By necessity, both roads will occupy corridors within the upland areas of the Conservation Zone. Their location will not impact any of the pools and, based on planned flora survey results, any native species impacted by these projects will be reintroduced elsewhere within the VPCZ in accordance with PAL's commitment to no net habitat loss.

Commercial developments proposed for Cross Keys Precinct will be situated outside the VPCZ. Fencing, native landscaping, water sensitive urban design and implementation of detailed Construction Environmental Management Plans will prevent damage to habitat and direct stormwater runoff away from the pools.

The VPCZ encompasses all but one pool (Pool 11), located in the Runways Precinct. Given its location and highly degraded, low biodiversity status it has been classified as a control pool and, under the current monitoring regime, used for benchmarking the remediation success of other pools in the VPCZ (Delta Environmental Consulting, 2006c). Whilst situated outside the VPCZ, the pool will continue to be protected and monitored. Its status as a control pool will be reflected in the Vernal Pools Conservation Zone Management Plan and it will be managed accordingly. The future O3-21R runway extension will necessitate an extension of the security fence, which will place this pool within the secure airside environment and which may also impact the ongoing retention of this pool.

As identified in the previous Airport Environment Strategy (and depicted in Figure 7.1), the proposed runway extension will infringe on the upland buffer zone surrounding Pool 11. PAL will conduct thorough environmental impact and operational safety assessments as part of the Building Activity approval process for this project, which will inform its design, construction and operation and determine the feasibility of retaining this pool. Should the finding of these assessments necessitate removal of the pool, PAL will develop and pursue an offset program that may include construction of a new pool from one of the existing hollows within the Bennett Precinct (see Section 3.12.9) or remediation of other degraded pools (additional to the planned revegetation of the vernal pool uplands).

A network of grassed swales that transport stormwater from north to south through the Runways Precinct is largely devoid of native habitat. PAL is committed to improving stormwater quality and consequently the ecological health of its waterways by supporting aquatic ecosystems. A revegetation trial will take us a step towards meeting this goal whilst enhancing biodiversity on airport.

Many bird species frequent the airport grasslands, including those in the VPCZ, such as White-fronted Chats, Stubble Quails and Fairy Wrens. Of the species recorded, none are listed in the *Environment Protection and Biodiversity Conservation Act 1999* or the *National Parks and Wildlife Act 1972*, with the exception of the Peregrine Falcon. PAL balances the dual interests of aviation safety and wildlife conservation through implementation of both the intended Vernal Pools Conservation Zone Management Plan and its comprehensive Wildlife Management Plan. The latter is required under the *Civil Aviation Safety Regulations 1998* and regulated by CASA.

14.7.2 Indigenous

As detailed in the Cross Keys Major Development Plan (PAL, 2004), Kurna representatives surveyed the Bennett Precinct and encountered two artefact scatters and six isolated artefacts (Wood, 1999). The artefact scatters consist of quartz flakes, deemed of social importance to the indigenous community, and are protected within the VPCZ. Their specific locations are recorded in the Environment Site Register and procedures are in place to ensure that sites of indigenous significance are appropriately protected from airport operational activities and new developments.

14.7.3 Heritage

No buildings or infrastructure have been listed to date on the Register of the National Estate, Commonwealth Heritage List. The Airservices air traffic control tower has been referred for possible Commonwealth heritage listing. If included, its status will be acknowledged by PAL in its future Heritage Management Strategy.

Heritage Management

To meet its obligations under the Regulations PAL has commenced a rigorous process for managing all aspects of natural, indigenous and built heritage – aligned to the broad requirements of the *Environment Protection and Biodiversity Conservation Act 1999* – that will continue for the next five years.

Thorough assessments of heritage values at Parafield Airport will be undertaken, the outcomes of which will inform the airport's Heritage Management Strategy in balance with future aviation-related development growth. The Strategy will align with the objectives of this Master Plan and its implementation driven through PAL's Environmental Management System. The Commonwealth Government's building approval process, regulated under the *Airports Act 1996*, will provide the mechanism for development control and trigger any relevant management actions relating to heritage.

A program of stakeholder consultation will accompany development of the Strategy and include the Department of Sustainability, Environment, Water, Population and Communities, State Department for Environment and Natural Resources and the City of Salisbury.

14.7.4 Flooding

Areas of Parafield Airport are susceptible to a degree of flooding with the risk potentially increasing as a result of climate change. Future flood risk scenarios will be assessed and considered by PAL in land use planning and heritage management. See Table 14.6.

Table 14.6 Land and Heritage Objectives

Objective (by 2032)			
<ul style="list-style-type: none"> · Conserve places of significant natural, indigenous and heritage value · Enhance biodiversity, in particular within the Vernal Pools Conservation Zone · Mitigate the risk of flooding 			
Goal (2012-2017)	Management Actions (2012-2017)	Responsibility	Timing (years)
Increase the proportion of native, endemic flora to exotic flora within the VPCZ (20% of 2007 levels by 2017)	· Finalise and implement the Vernal Pools Conservation Zone Management Plan	PAL/Stakeholders	1-5
	· Draft the Vernal Pools Conservation Zone Revegetation Plan	PAL/Stakeholders	1-3
	· Continue to regularly monitor flora and fauna in the VPCZ	PAL/Contractors	1-5
	· Continue to apply biodiversity no net loss policy to VPCZ	PAL	1-5
Increase the annual number of native species planted on airport	· Conduct a trial replanting program of the open stormwater network	PAL/Contractors	1-3
	· Monitor the open stormwater network using the Index of Stream Condition as per the SQMIP to measure success	PAL/Contractors	1-5
	· Partner with external stakeholders to support a biodiversity program in Council controlled easements or drains adjacent the airport	PA/Stakeholders	1-3
	· Continue to implement the PAL Landscape Guidelines	PAL/Tenants	1-5
Establish a holistic heritage management framework	· Finalise and implement a Heritage Management Strategy based on the findings of heritage surveys	PAL/Contractors	1-3
	· Develop Heritage Management Plans, where required	PAL/Contractors	4-5
	· Continue to implement procedures for identifying and protecting archaeological artefacts	PAL/Stakeholders	1-5
	· Continue to provide avenues for consultation between PAL and the Kaurua people	PAL/Stakeholders	1-5
Model flood risk	· Survey ground levels where data gaps exist	PAL/Contractors	1-3
	· Conduct review of existing flood information from external stakeholders	PAL/Contractors	1-3
	· Undertake flood modelling based on current and future climate scenarios	PAL/Contractors	4-5
	· Assess flood risk to Vernal Pools Conservation Zone, places of heritage value and other infrastructure	PAL/Contractors	4-5

